

# Growth-related, Indirect Impact Analysis Canyon City Transportation Improvement Project An Illustrative Example

Note: This fictional example illustrates the concepts and principles used for identifying and assessing growth-related, indirect impacts of transportation projects as described in the *Guidance for Preparers of Growth-related, Indirect Impact Analyses* (guidance). It is meant to be a simplified, hypothetical example of a proposed highway project with growth-related, indirect impacts designed to illustrate all the steps in the analysis process.

## Purpose and Need

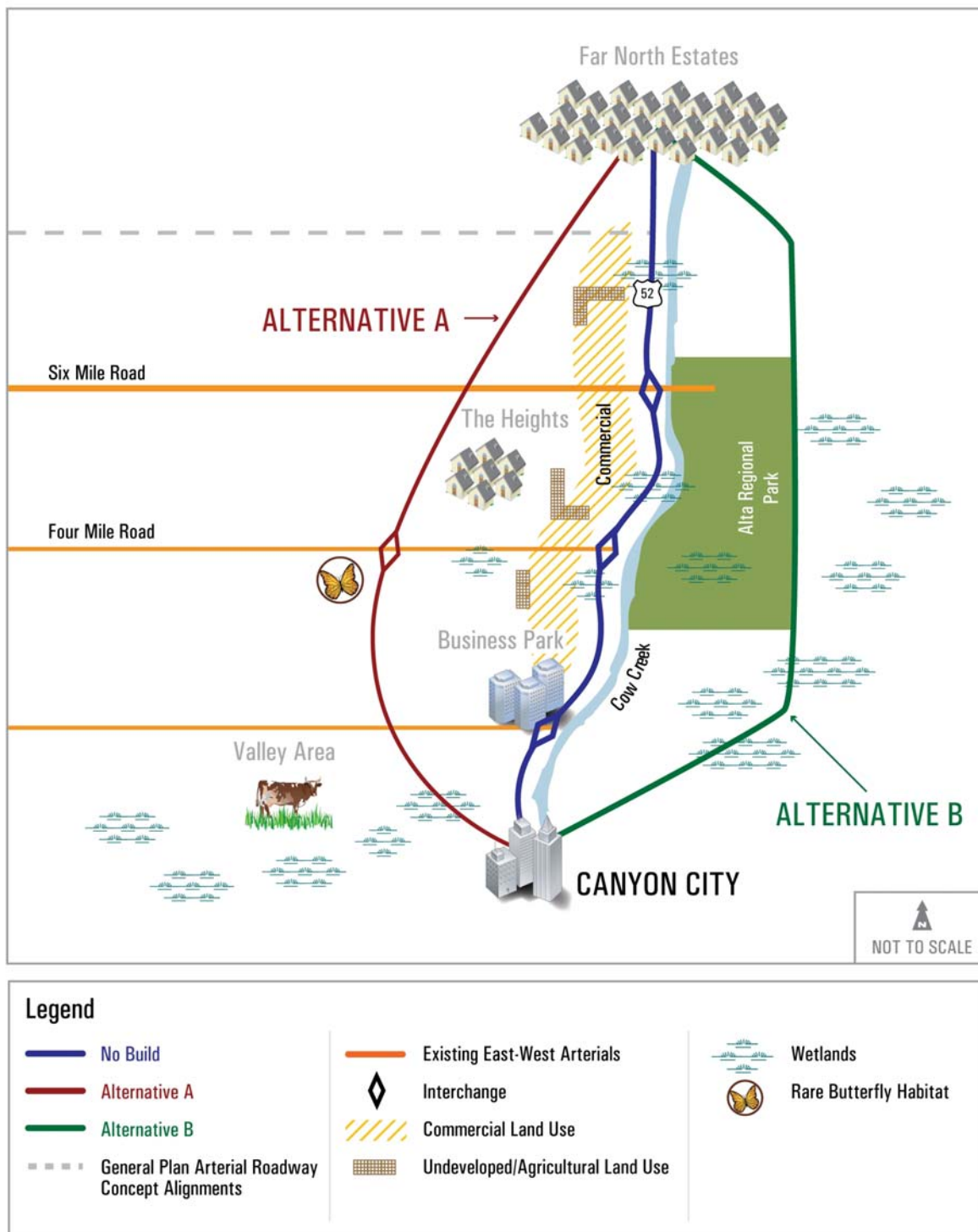
The purpose of the fictional Canyon City Transportation Improvement Project (proposed project) is to relieve existing and projected congestion-related traffic and safety problems on a segment of Highway 52 north of the Canyon City urban area. The need for additional capacity along this northern segment of Highway 52 was identified in the Regional Transportation Plan. Levels of service (LOS) are currently degraded and LOS F is projected in the corridor within 5 years. Traffic congestion has increased because of development in The Heights and increased visitation to the regional park. Accident rates for this northern segment of Highway 52 currently exceed averages for similar facilities statewide.

## Project Description

For purposes of illustration, Highway 52 is a north-south road connecting established employment centers in densely developed downtown Canyon City and the suburban Business Park to The Heights located north of the city and to Far North Estates located approximately 10 miles north of the city (Figure 1). Highway 52 is the primary connection between the employment centers, the rapidly developing residential community of The Heights, and Far North Estates. Far North Estates is an established, fully built-out residential community with no plans for future development.

The Canyon City Transportation Improvement Project is evaluating alignments for new roadways parallel to Highway 52 to provide additional capacity in the corridor north of Canyon City. All feasible operational improvements have been made to Highway 52 to maximize capacity and address congestion-related safety concerns. No widening of the highway is possible because Cow Creek closely parallels the highway's east side and existing commercial development closely parallels its west side. Roadway-fronting commercial development extends along the length of the corridor, but there are a few undeveloped parcels and parcels still used for agriculture dotting the corridor.

The Department of Transportation conducted preliminary engineering and environmental studies, which are documented in a Project Study Report (PSR). Resources of concern found north of the city include wetland areas regulated under Section 404 of the Clean Water Act and habitat for the Rare Butterfly (*Rareus butterflyi*), a federally listed endangered species. Also, the regional park is designated as a Section 4(f) property. Consultation with resource agencies indicates there are comparatively fewer natural resources west of Highway 52.



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FIGURE 1  
Project Location and Alternatives

The PSR evaluated two hypothetical build alternatives. Alternative A would provide a parallel roadway approximately two miles west of the existing highway (see Figure 1). An interchange would be located at Four Mile Road to provide access for residents of The Heights. No major developments are currently proposed in the immediate area of the interchange.

Alternative B would provide a parallel roadway approximately two miles east of Highway 52 (see Figure 1). No new interchange is needed for the Alternative B alignment because the regional park would continue to be accessed from existing Highway 52 at Six Mile Road. Also, the Alta County Parks Commission is opposed to providing a new interchange for park access because of the costs for providing additional security and the disruption of scenic recreational qualities along the eastern edge of the park.

The PSR provided the following information about the proposed build alternatives:

- ✓ Alternative A
  - Lands located north and west of Canyon City are zoned for residential, commercial, and light industrial development purposes.
  - The area west of Canyon City (Valley Area) has experienced rapid growth and development in the last five years, particularly in The Heights.
  - Water and sewer infrastructure is currently available and expansion is planned for The Heights.
  - The Valley Area is zoned for development but has experienced little growth.
  - There are some wetlands and Rare Butterfly habitat near the proposed interchange.
  - Canyon City favors this alternative except for its higher right-of-way cost.
- ✓ Alternative B
  - The area east of Highway 52 is zoned for parks/open space and has seen little growth or development.
  - There is no water or sewer infrastructure built or planned east of the highway.
  - Alternative B would indirectly provide improved access for traffic to the regional park by removing regional through traffic from existing Highway 52.
  - There is abundant wetland habitat east of the highway.
  - Right-of-way costs are about 25 percent less for this alternative.
  - The Friends of Cow Creek Watershed has focused its efforts on the preservation of the wetlands east of Highway 52.

## **First-cut Screening (see Chapter 5 of the guidance)**

During project scoping, the environmental planner conducted a first-cut screening to determine whether there would be a potential for project-related growth. She considered the interrelated screening factors (accessibility, project type, project location, and growth pressure) discussed in Chapter 5 and summarized in Figure 5-2 of the guidance. In addition to the PSR, she reviewed the city's recently updated general plan and consulted with city and county planners familiar with The Heights area. She was told that The Heights is a strong population and employment growth area, and that the city and county are encouraging residential, commercial, and light-industrial development in this direction because it is the preferred growth pattern.

The environmental planner reviewed existing traffic count data, accident data, and traffic forecasts found in the PSR and the information provided by city planners, and discussed the project further with the Project Development Team (PDT). She concluded that the proposed build alternatives could change (improve) traffic operations in the corridor by reducing the level of congestion and improving LOS on existing Highway 52, providing a parallel roadway facility to the existing congested highway. In addition, the new Four Mile Road interchange in Alternative A would somewhat change accessibility north of the city and to The Heights. She also read in the guidance that large parcels of undeveloped lands near an expanding urban area are usually prime areas for growth. Ongoing residential and commercial construction activity, the availability of undeveloped land at a reasonable cost in The Heights, and a strong regional economy all suggest a high degree of growth pressure in that area.

Based on the information developed in the PSR and the general plan, and from talking to city and county planners, the environmental planner established a geographic area for the analysis that incorporated the existing Highway 52, land areas surrounding Alternatives A and B, and areas along connecting roadways. The geographic area encompasses approximately 60 square miles (Figure 2). Within the geographic area, the potential resources of concern are wetland areas regulated under Section 404, habitat for the endangered Rare Butterfly, and Alta Regional Park.

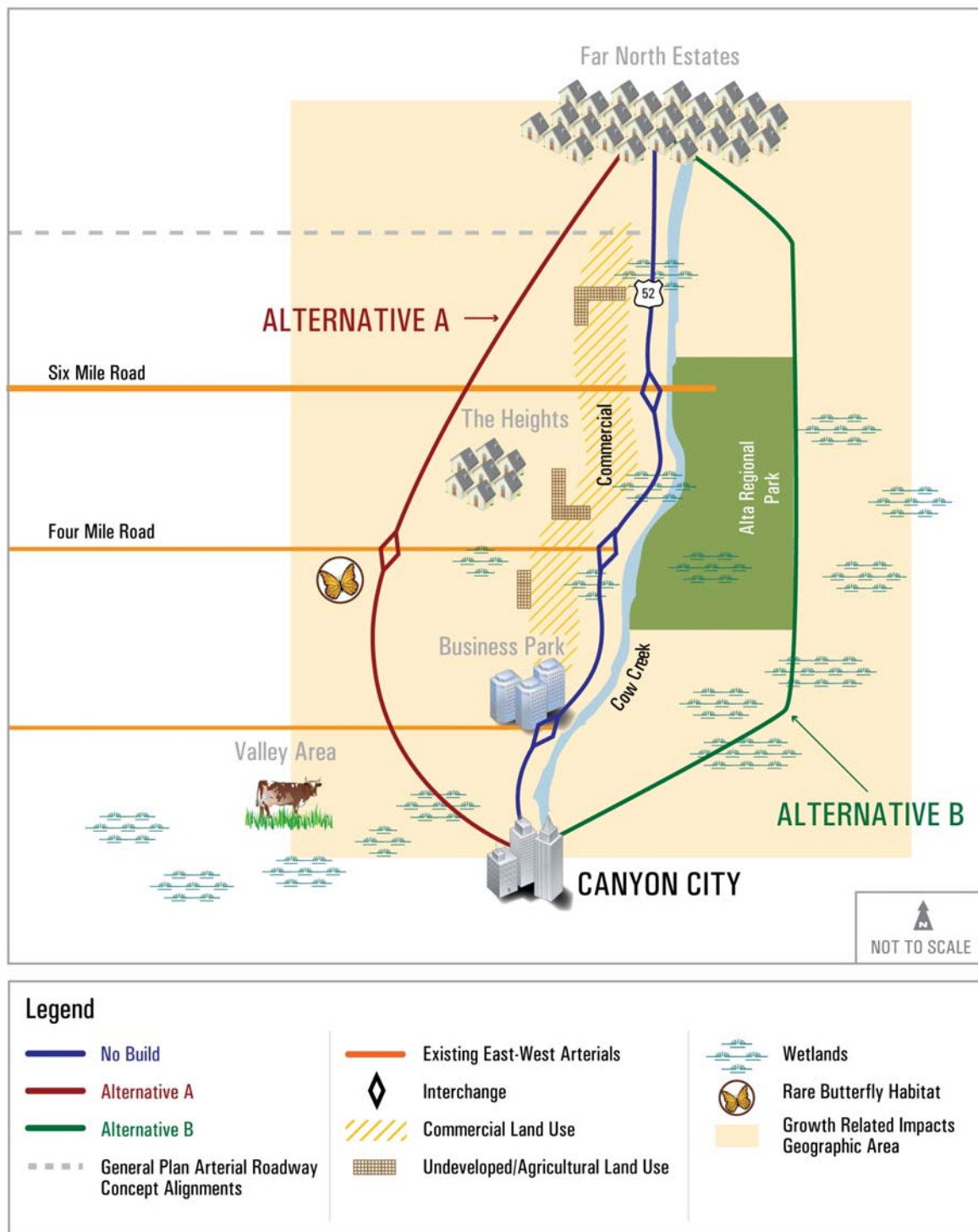
The environmental planner concluded that the screening factors (accessibility, project type, project location, and growth pressure) collectively point to a high potential for project-related growth, and that resources of concern may be affected by this growth. She identified the potential for growth-related, indirect impacts associated with the interchange in Alternative A. Therefore, she determined that further analysis was warranted for the Canyon City Transportation Improvement Project. She discussed the findings of the first-cut screening with the PDT.

## **The Analysis (see Chapter 6 of the guidance)**

### **Step 1 – Review previous project information and “right-size” the analysis.**

A year later as the project’s technical studies neared completion, the environmental planner assigned to prepare the NEPA/CEQA document reviewed previous project information and the first-cut screening conclusions. Based on this review, she decided that this information needed to be supplemented with additional data and analyses in order to conduct a growth-related, indirect impact analysis. To refresh her memory, she reviewed Tables 6-1 and 6-2 in the guidance to determine what tools and data sources could be used to facilitate the analysis.

The environmental planner decided that a variety of quantitative and qualitative approaches, such as the use of available geographic information systems (GIS) data to better map and characterize the geographic scope of project effects, were needed for the analysis. Using GIS was a cost-efficient and expeditious method of analyzing data because the city and county have high-quality GIS data for the geographic area. In addition to mapping and collecting quantitative data (population and employment data, growth forecasts, etc), she obtained qualitative information from the general plan, city and county personnel, the Alta County Council of Governments, the Alta County



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FIGURE 2  
Geographic Area for Growth-Related Impact Analysis

Transportation Planning Agency, and regulatory and resource agency websites and personnel.

Because the potential for growth in the area is strong, the environmental planner also decided to convene an expert panel to obtain input on potential changes in development anticipated between the No-build and build alternatives. The decision to use an expert panel was made after balancing the availability, data gaps, and usefulness (freshness) of data and from comments received from agencies and north area residents during NEPA/CEQA scoping.

## **Step 2 – Identify the potential for growth for each alternative.**

Using the data sources and tools identified in Step 1, the environmental planner developed a draft future development scenario for the existing and reasonably foreseeable future land use and development patterns in the geographic area for the No-build and build alternatives.

### Future Development Scenario, No-build Alternative

Prior to 1990, the majority of the land north and west of the city was used for agricultural and low-density residential purposes. The roadway network was relatively undeveloped. Because of the development occurring in The Heights, approximately 40 percent of the land in this area currently remains undeveloped. According to the general plan and zoning maps, much of this undeveloped land consists of parcels that are zoned for residential, commercial, and light industrial purposes. New development in The Heights is occurring consistent with the general plan and zoning designations. Future infrastructure to support this development is programmed into The Heights capital improvement program.

In their planning documents, the city and county identified The Heights as a strong population and employment growth area. The area has experienced rapid growth in the last five years, and the regional growth forecast to the year 2020 shows this trend continuing. Due to this planned growth, future land use is expected to continue to change from agricultural and low-density residential to higher intensity land uses including light industrial, commercial, and high-density residential developments. A list summarizing the planned development in The Heights was compiled based on information obtained from the city and county. Year 2020 population and employment forecasts obtained from the Alta County Council of Governments and the city reflect the planned development in The Heights.

Although the Valley Area is zoned for development, no infrastructure is built or planned for the area. This area has experienced little growth. Also, the regional growth forecast to the year 2020 shows a low-level of growth for this area.

Lands east of Highway 52 remain mostly undeveloped because of the influence of the regional park and the efforts of environmental groups, such as the Friends of Cow Creek Watershed, to protect the wetlands in the area. The county's zoning map shows that most of this area is zoned for parks/open space purposes. There are a few residences in the area. County planners indicate that no new infrastructure is planned for the area. This area has seen virtually no growth; the regional growth forecast to the year 2020 shows a low level of growth for the area.

Based on the above description of the existing and future development in the geographic area, population growth in The Heights area and development along the roadway frontage is expected to continue at a fairly rapid rate under the No-build Alternative. The LOS on the north segment of Highway 52 will continue to rapidly degrade to LOS F and accident rates are expected to continue to be higher than statewide averages. Canyon City's general plan encourages growth in this direction because that is the preferred growth pattern. More recent discussions with city and county planners confirmed this trend. In contrast, city and county planners expect the Valley Area and the area east of Highway 52 to remain mostly undeveloped with little growth under the No-build Alternative. Far North Estates is fully built-out with no potential for future development.

### Expert Panel

An expert panel was convened for the Canyon City Transportation Improvement Project and was made up of representatives from following agencies and groups:

- Canyon City planners
- The Heights Neighborhood Association
- Canyon University Urban Planning Department
- Far North Estates Property Management Association
- Alta County Council of Governments
- Alta County Transportation Planning Agency
- Local real estate professionals
- Local developers

The purpose of the panel was to (1) review the future development scenario developed for the No-build Alternative; and (2) provide predictions about potential changes in growth and development (location, rate, type, or amount) in order to develop a future development scenario for the build alternatives. Representatives from the California Department of Fish and Game, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, Alta County Regional Parks, and Friends of Cow Creek Watershed were invited to attend the expert panel meetings.

The expert panel observed that because Alternative A would be located within the area where growth and development was already occurring, the focus of their analysis would be on how the new interchange at Four Mile Road would affect the location and timing of development.

### Future Development Scenario, Alternatives A and B

The expert panel predicted that Alternative A has the potential to shift the location of growth in the geographic area as compared to the No-build Alternative. For the No-build Alternative, growth is expected to occur around the perimeter of The Heights. For Alternative A, the new interchange would shift the direction of growth south of The Heights and Four Mile Road. The panel believes the area within a two-mile radius of the interchange itself would be the area experiencing the greatest growth pressure. Although the shifts in land use projected to occur with Alternative A conform to the general plan and zoning designations, they probably would not happen "but for" the proposed build alternative.

In contrast, the expert panel thought that Alternative B would have a very low potential to change the location, rate, type, or amount of growth and development in the geographic area. Alternative B would provide new roadway capacity from Canyon City to Far North Estates. The lack of intermediate access along Alternative B would provide an impediment to growth in the area east of the park, which contains sensitive aquatic resources.

### **Step 3 – Assess the growth-related effects of each alternative to resources of concern.**

The environmental planner knew that the projected shift in the location of development associated with the interchange in Alternative A was not a problem in and of itself – the issue was whether or not the shift was likely to impact resources of concern. Her next step was to examine the projected growth areas for resource issues. After talking to the expert panel, she used GIS data to prepare a map of the resources occurring within a two-mile radius of the proposed interchange location to facilitate her analysis of resource effects (Figure 3).

No-build Alternative. Even though the city and county have adopted “smart growth” and zoning policies to protect sensitive resources, it is anticipated that there would be some growth-related, indirect impacts to wetlands under the No-build Alternative. This would result from the development of vacant and agricultural parcels along existing Highway 52 and at intersections. Approximately 10 acres of wetlands would be impacted by future development. No other resources of concern would be affected under the No-build Alternative.

Alternative A. Construction of Alternative A would directly impact 8 acres of wetlands. In addition, wetland resources and Rare Butterfly habitat are located near the proposed interchange area in Alternative A (see Figure 3). The anticipated shift in the location of growth associated with the interchange would likely place the wetland resources and Rare Butterfly habitat under greater threat of development. Approximately 20 acres of wetlands and 12 acres of Rare Butterfly habitat potentially could be affected.

Alternative B. Although construction of Alternative B would directly impact 12 acres of wetlands, no growth-related, indirect impacts to wetlands or other resources of concern would be expected. Alternative B would not adversely affect the activities, features, and attributes that qualify Alta Regional Park for protection under Section 4(f). No Section 4(f) impact would occur.

The environmental planner understands that the 20 acres of wetlands potentially at risk does *not* mean that there are 20 acres of growth-related, indirect impacts projected for Alternative A. Some of the projected development may avoid the wetlands. The combined direct and growth-related, indirect impacts of Alternative A are greater than those for Alternative B, and she concludes that it is not necessary to evaluate the issue further. She also realizes that in addition to potential NEPA and CEQA impacts, a Section 404 permit will be needed. Absent avoidance and minimization measures, Alternative B would be the Section 404 least environmentally damaging practicable alternative (LEDPA), *notwithstanding the fact it would have more direct impacts*. However, she recognizes that the growth-related, indirect impacts of Alternative A can



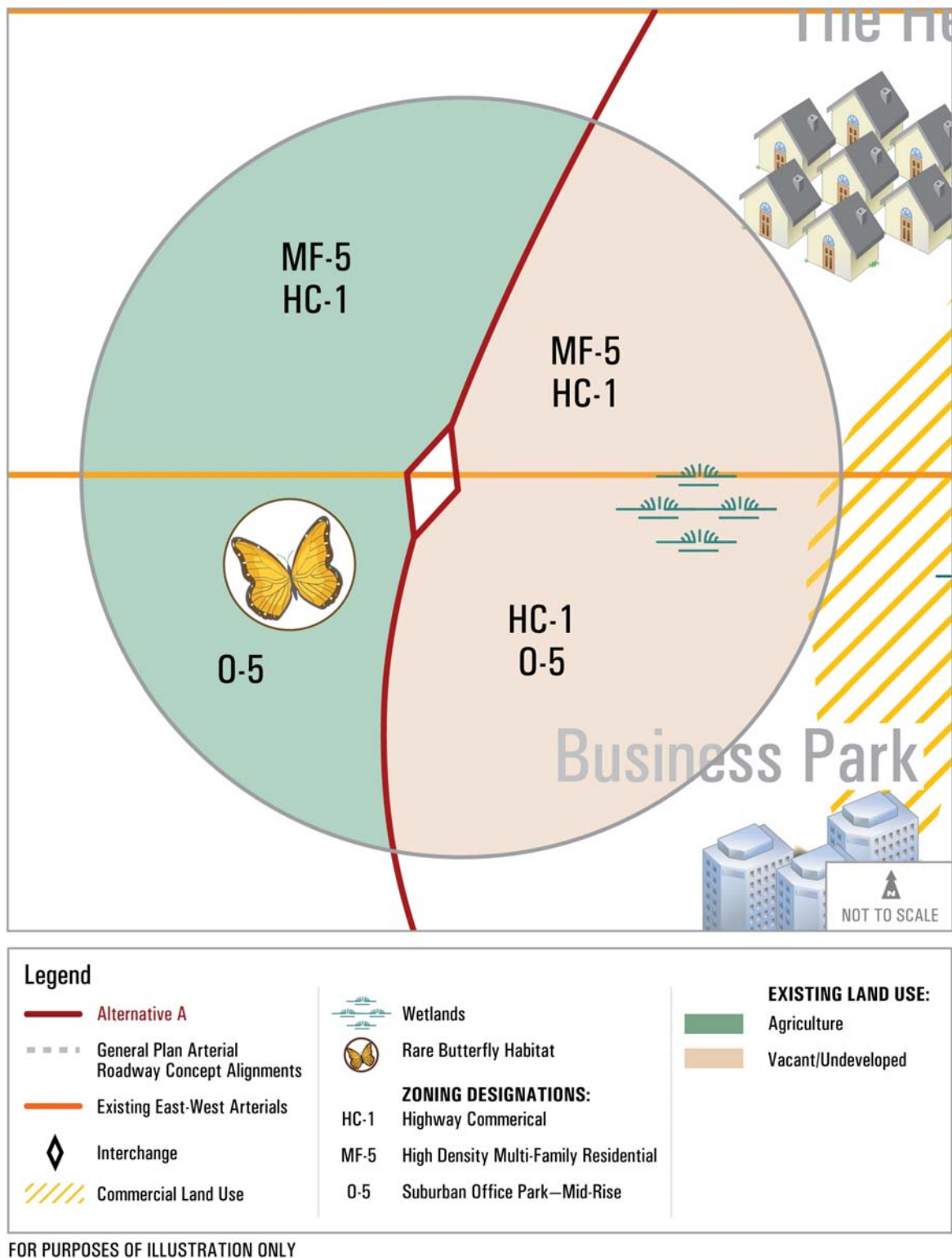


FIGURE 3  
Resources at Four Mile Road Interchange

be greatly reduced by a modified alternative, so she turns her attention to the next step in the analysis process.

**Step 4 – Consider additional opportunities to avoid and minimize growth-related impacts.**

The environmental planner consulted the PDT about the likely growth-related, indirect impacts to wetland resources and Rare Butterfly habitat associated with Alternative A. The PDT explored avoidance and minimization opportunities for the proposed project. While Alternative B meets the project's purpose and need, it does not meet the needs expressed by residents of Canyon City and The Heights as well as Alternative A. The PDT felt that Alternative A would be the locally preferred alternative.

The PDT decided that Alternative A could be modified to avoid the growth-related, indirect impacts to wetlands and Rare Butterfly habitat while still fulfilling the project's purpose and need. Alternative A2 was developed (Figure 4) and would be similar to Alternative A except that the proposed interchange would be relocated to Six Mile Road, which would avoid potential resource impacts.

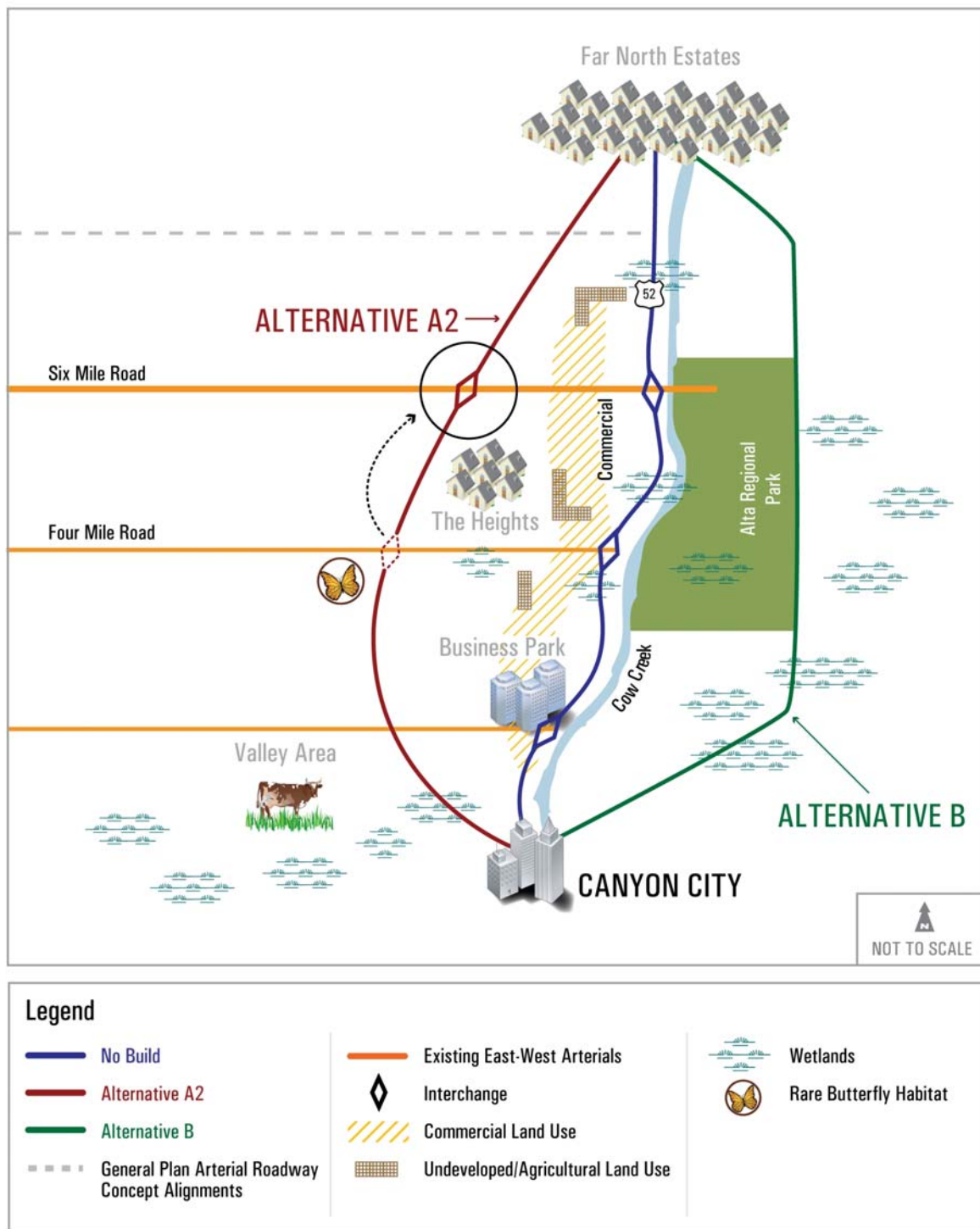
The environmental planner asked the expert panel members to confirm that the growth predicted around the new interchange in Alternative A2 would be similar to that of Alternative A, and that sensitive resources would not be affected. Also, the Six Mile Road interchange was found to be comparable to the Four Mile Road interchange in terms of conforming to the general plan, zoning designations, and the desires of The Heights Neighborhood Association.

The modified Alternative A2 was consistent with the county's goal to minimize cumulative impacts to Rare Butterfly habitat and wetlands. As a long-range measure, the county agreed to purchase a conservation easement to protect the Rare Butterfly habitat from future development, as recommended by the Friends of Cow Creek Watershed. The county also agreed to explore measures to minimize future development impacts to wetlands.

For Alternative B, the opportunities identified to avoid or minimize wetland impacts only slightly reduced the degree of impact.

**Step 5 – Compare the results of the analysis for all alternatives.**

The environmental planner prepared the following table to compare how and to what extent growth associated with all the alternatives for the Canyon City Transportation Improvement Project would affect resources of concern.



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FIGURE 4  
Alternative A2

| Resources at Risk   | No-build | Alternative A | Alternative A2 | Alternative B |
|---|----------|---------------|----------------|---------------|
| Wetlands<br>potential direct impacts                                    | None     | 8 acres       | 8 acres        | 12 acres      |
| Wetlands<br>potential growth-related,<br>indirect impacts               | 10 acres | 20 acres      | None           | None          |
| Rare Butterfly habitat<br>potential direct impacts                      | None     | None          | None           | None          |
| Rare Butterfly habitat<br>potential growth-related,<br>indirect impacts | None     | 12 acres      | None           | None          |
| Alta Regional Park Section 4(f)   | No       | No            | No             | No            |

No-build Alternative. Some growth-related, indirect impacts to wetland resources would occur under the No-build Alternative. This would result from the development of vacant and agricultural parcels along existing Highway 52, existing intersections, and along major arterials near the intersections.

Alternative A. This alternative was found to have the potential to change the location of growth in the geographic area as compared to the No-build Alternative. This anticipated change in growth would likely place wetland resources and Rare Butterfly habitat located near the proposed interchange under greater threat of development than under the No-build Alternative.

Alternative A2. While similar to Alternative A, the proposed interchange would be relocated to Six Mile Road, which avoids growth-related, indirect impacts to wetlands and Rare Butterfly habitat. No other growth-related, indirect impacts to resources were identified for this alternative.

Alternative B. No growth-related, indirect impacts to resources of concern were identified for this alternative.

The environmental planner used the above information to contribute to identifying the preferred alternative for the Canyon City Transportation Improvement Project (in this case Alternative A2 became both the preferred alternative and the LEDPA).

### **Step 6 – Document the process and findings of the analysis.**

The environmental planner documented the analysis approach and the findings of the growth-related, indirect impact analysis in the environmental document. She described information about the methods used, the expert panel, and the other agencies and experts consulted. Source material was documented (e.g., general plans, population and employment data and forecasts, GIS data, etc) and all assumptions were explained. She described the design change made to Alternative A in order to avoid the potential growth-related, indirect impacts to wetlands and Rare Butterfly habitat located near the proposed interchange on Four Mile Road.